Programming Human ESC-derived Neural Stem Cells with MEF2C for Transplantation in Stroke

Grant Award Details

Programming Human ESC-derived Neural Stem Cells with MEF2C for Transplantation in Stroke

Grant Type:	Early Translational IV
Grant Number:	TR4-06788-A
Project Objective:	The objective of this proposal is to demonstrate the feasibility of using human embryonic stem cell (hESC)-derived neural stem/progenitor cells (NPCs) expressing constitutively active MEF2C as a cell therapy candidate for stroke.

Investigator:		
	Name:	Stuart Lipton
	Institution:	Sanford-Burnham Medical Research Institute
	Type:	PI

Disease Focus:	Neurological Disorders, Stroke
Human Stem Cell Use:	Embryonic Stem Cell
Award Value:	$1,020,815
Status:	Closed

Progress Reports

Reporting Period:	Year 1
View Report	

Grant Application Details

Application Title:	Programming Human ESC-derived Neural Stem Cells with MEF2C for Transplantation in Stroke

Public Abstract:

The goal of this project is to produce a stem cell-based therapy for stroke (also known as an ischemic cerebral infarct). Stroke is the third leading cause of death in the USA, and a leading cause of disability among adults. Currently, there are no effective treatments once a stroke has occurred (termed completed stroke). In this proposal, we aim to develop human stem cells for therapeutic transplantation to treat stroke. Potential benefits will outweigh risks because only patients with severe strokes that have compromised activities of daily living to an extreme degree will initially be treated. Using a novel approach, we will generate stem cells that do not form tumors, but instead only make new nerve cells. We will give drugs to avoid rejection of the transplanted cells. Thus, the treatment should be safe. We will first test the cells in stroke models in rodents (mice and rats) in preparation for a human clinical trial. We will collect comprehensive data on the mice and rats to determine if the stem cells indeed become new nerve cells to replace the damaged tissue and to assess if the behavior of the mice and rats has improved. If successfully developed and commercialized, this approach has the potential for revolutionizing stroke therapy.

Statement of Benefit to California:

The goal of this project is to produce a stem cell-based therapy for stroke (also known as an ischemic cerebral infarct). Stroke is the third leading cause of death in the State of California, and a leading cause of disability among adults. Currently, there are no effective treatments once a stroke has occurred (termed completed stroke), and the quality of life is severely compromised in those that survive the malady. In this proposal, we aim to develop human stem cells for therapeutic transplantation to treat stroke. Using a novel approach, we will generate stem cells that do not form tumors, but instead only make new nerve cells. If successfully developed and commercialized, this approach could provide a therapeutic candidate for the unmet medical need, which would have a tremendous impact on the quality of life for the patient, his or her family, and for the economic and emotional burden on the State of California and its citizens.